

## ABSTRACT

A user-authentication sub-system and approach for user authentication. The user authentication sub-system of one aspect includes at least a first input mechanism to receive first multi-factor authentication data associated with  $Z$  authentication factors, a cryptographic engine to encrypt the first multi-factor authentication data, and a separated user authentication, non-volatile data store to store the encrypted first multi-factor authentication data. The sub-system further includes a processing unit to determine whether second authentication data received via the at least first input mechanism matches a subset of the first multi-factor authentication data, the second authentication data associated with  $N$  authentication factors where  $N$  is less than or equal to  $Z$ .